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Expanding Streetcar Service in Tacoma

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EXPANDING STREETCAR SERVICE IN TACOMA

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PURPOSE/OBJECTIVES

The purpose of this project was to determine possible routes for future Link service. We wanted to create routes based on existing transit locations and also the prospective Tacoma General expansion. These included the Tacoma Community College, 72nd, and Tacoma Mall transit centers. The Tacoma General area connection would be at the Mary Bridge Hospital location. We also sought to take into account roads that could feasibly be used based on their width and slope, proximity to medical facilities, commercial districts, and demographics including senior citizen and poverty density.

Figure 1: This map shows streets should be able to support a Link rail. It also shows areas of slopes more extreme than the Link could handle.

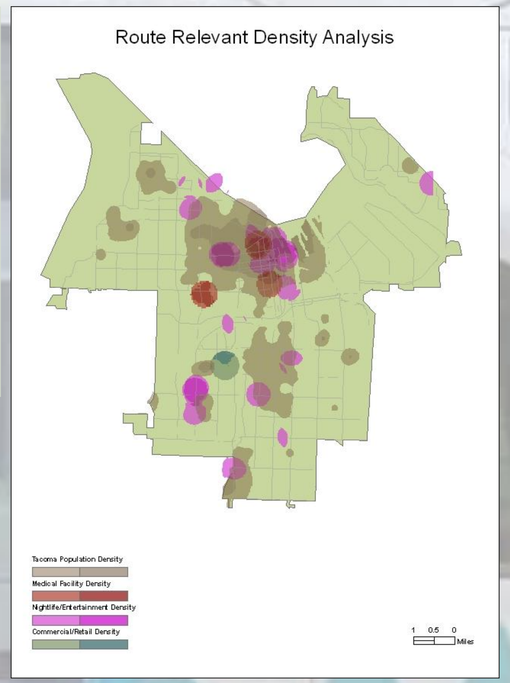

Figure 2 :This shows the densities of different variables used in the analysis.

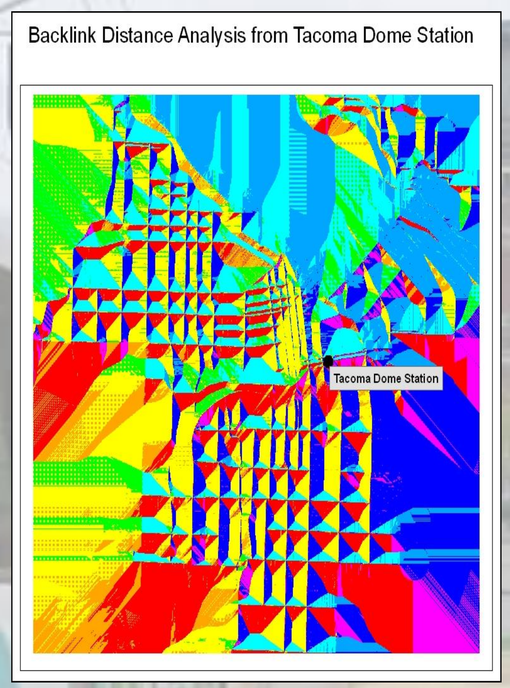

Figure 3: This shows the backlink raster created from taking into account many different categories of Link rail service

METHODS

- Data used: Tacoma streets, elevation data, poverty status, age, population density, commercial points, medical facility locations, bar locations.
- Elevation data was made into a slope raster. We then isolated streets that were within the area of 8% slope or less (Figure 1).
- We then turned point shapefiles into point density rasters.
- We created individual centroid shapefiles out of the block group demographic data. From the centroids, we interpolated the data to create rasters.
- We created point shapefile for each transit location.
- We created a single raster all of the individual rasters taking into account all densities. The was made in a way so that areas of lower densities of any of these zones had a higher cost than the high density areas (Figure 2).
- We created a cost distance and backlink raster (Figure 3) for all stops analyzed using the raster in the previous step.
- We then used a cost path analysis to determine the best routes connecting transit stations.

RESULTS

The cost path analysis was able to keep the route on the usable roads (Figure 4). A path we find interesting is that the route between Tacoma Community College and the Tacoma Mall station goes down 12th street instead of 19th. After looking at some of the raw data, we found that there are segments of 19th that had too much length of steep inclines which made 12th more favorable.

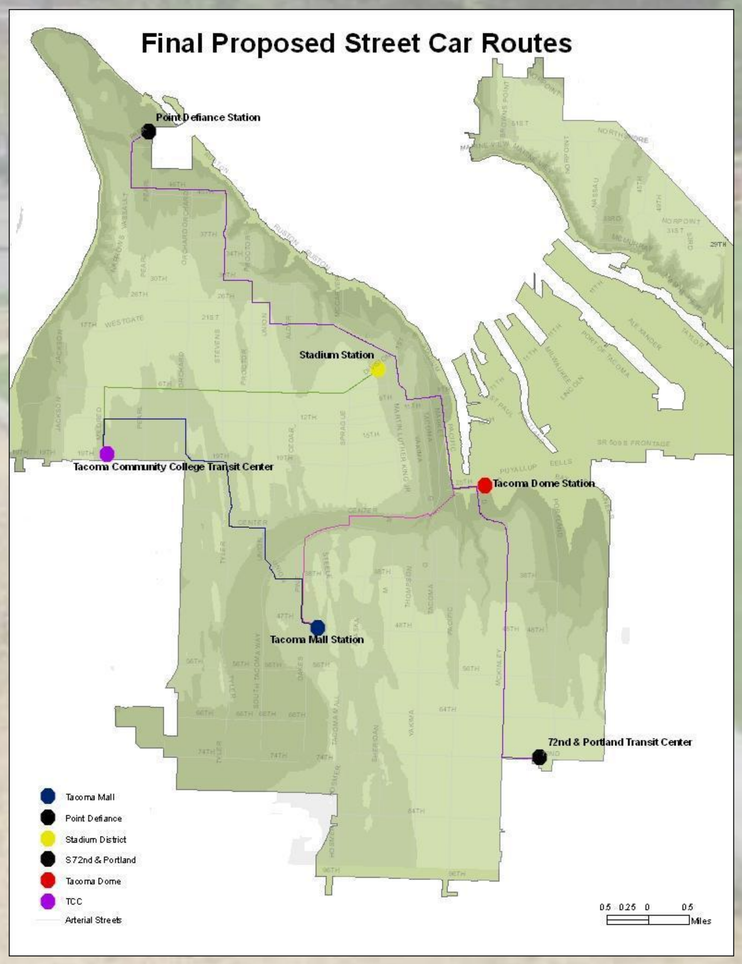

Figure 4: This shows the final routes as determined by the cost path analysis.

CONCLUSION

Based on our analysis we determined that expansion of a streetcar system to existing transit centers is feasible. The routes sudgested provide service to areas of high commercial, service, medical and population density while taking into consideration the limiting factors of street grade and street classification.

REFERENCES

-Council, T. C. (2011, Feb 22). Meeting Minutes. Tacoma, WA.
-Council, T. C. (2008). *Tacoma's Climate Action Plan*. Tacoma: City of Tacoma.
-http://www.inekon-trams.com/index.html
-http://www.soundtransit.org/
-http://www.soundtransit.org/x2099.xml

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